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ADDITIONS TO THE LICHEN-FLORA OF SOUTHERN CALIFORNIA

H. E. HASSE.

In this, as in a former paper (THE BRYOLOGIST, Nov. 1909), a terminology for the apothecial structures is adopted that has been proposed by Dr. O. V. Darbishire, now of Armstrong College, Newcastle-on-Tyne, England. (See Berichte d. Deutsch. Botan. Gesellschaft, 1898, XVI, Plate 1, and also Engler & Prantl, 1907, p. 41, Allgem. Theil by M. Fuenfstueck.) These terms vary but little from those in use, combining the differing terms of various authors used for the same structures, also possessing the merit of simplicity and of being clearly designative. They are:

Epithecium, the layer covering the disk.

Thecium, the structure consisting of the paraphyses and the spore-sacs.

Hypothecium, the layer on which the thecium rests.

Parathecium, the vertical, latteral continuation of the hypothecium, and forming a cup holding the epithecium and thecium.

Proper margin, is the rim of the cup, encircling the epithecium.

Thalline margin, that part, when present, of the thallus encircling the parathecium.

Amphithecium, the immediate continuation outward of the thalline margin, containing the gonidia and clothed by the cortex. The deeper structure continuing under the hypothecium is the *Medulla*.

PARMELIA MULTISPORUM Schneider, Guide, 1898, p. 154.=*Parmelia olivacea* var. *multisporum* Merrill, BRYOLOGIST, July, 1909.

The range of this lichen can now be extended south to the San Bernardino mountains, California. To the excellent description given by Mr. G. K. Merrill, I beg to add:—epithecium continuous, brown gradually paling downward; thecium colorless, 60μ to 64μ high, staining blue with iodine except the epithecium, which retains its natural color; paraphyses coherent; hypothecium colorless; asci inflated clavate; spores 16 to 24 in asci, ovoid, 8μ to 9μ long, 5μ to 8μ thick, or globular and 5μ to 8μ thick, the differing forms about equal in number. Not more than twenty-four spores were seen in specimens examined.

Aside from the smaller size of the thallus, it is externally quite similar to *Parmelia olivacea* (L.) Nyl. the marked feature of the spore character, however, seems to entitle it to the species rank of its author. The writer has seen it from the Santa Cruz mountains (A. C. Herre), San Bernardino mountains (S. B. Parish), and has collected it in the

Yosemite Valley on the smooth bark of oak branches, etc., also on twigs, dead and living, in the San Gabriel range, Los Angeles County.

THELOSCHISTES VILLOSUS (Ach.) Norm., on *Lycium Californicum* Nutt. and other shrubs at Point Loma near San Diego.

The apothecia are rare and the plant is smaller than the type from Lower California, where Mr. C. R. Orcutt collected it.

PLACOLECANIA CANDICANS (E. Fr.) A. Zahlbr., Ascolichenes in Engler & Prantl, 1907, p. 205.=*Lecanora candicans* Schaer.. Crombie Bi. Li. 1894, p. 390.

Thallus appressed, forming round patches, areolate-rimose in the center, or sqamulose, the scales somewhat discrete roundish lobulated, at the circumference radiate, the radii also lobulated. KHO-. Apothecia sessile, disk dull brownish-black with a faint bloom and a turgid, finally crenulated thalline margin; epithecium grayish-brown, subcontinuous; thecium colorless, 96μ to 102μ high, with iodine deep blue; paraphyses coherent, strict, neither septate or forked; the tips slightly clavate and colored; hypothecium nearly colorless or with a faint yellowish tint: asci clavate; spores in 8s, oblong-ellipsoid, 11μ to 17μ long, 4μ to 5μ thick; spermatia staff shaped, 4μ to 5μ long, 1μ thick; the gonidial layer is continuous under the hypothecium. On calcarious rock, Catalina Island.

Bacidia Clementis, Hasse sp. nov.

Thallus crustaceous, moderately thick, subdeterminate, whitish, coarsely granular and rugulose, becoming chinky, KHO-, Ca (Cl. O) 2-. Apothecia sessile, small, 0.2 to 0.8 mm. wide; disk primarily flat, brown-black, soon convex, the proper margin concolorous, soon absolete; epithecium colorless, granulose; thecium colorless to pale brownish at the circumference; paraphyses not coherent, loosely intertwining, branched, not thickened nor colored at the tips; hypothecium yellowish-gray; asci clavate to subcylindric, 68μ to 112μ long, 12μ to 16μ thick, the membrane not at all or slightly thickened at the top in the larger asci; spores in 8s, cylindric, 60μ to 80μ long, 4μ to 5μ thick, both ends equally bluntly obtuse without attenuation, 15 to 17 locular, mostly once or twice gently curved; hym. gel. gives no reaction with iodine, only the asci becoming yellow, the escaped spores do not stain with the reagent; hypothecium brown, not changed with KHO; spermagones seen as minute black protrusions, sterigma straight, simple; spermatia acicular, straight or lightly curved, 10μ to 12μ long.

Collected at San Clemente on bark of *Heteromeles arbutifolia* Roem. by Bl. Trask. Since then I have found it on the same substrata in St. Ynez cañon of the Santa Monica mountains. Type specimen deposited in the herbarium of the writer.

Haematomma Pacifica Hasse sp. nov.

Thallus white, effuse, finely granular, KHO+yellow, Ca (Cl. O) 2–; apothecia sessile, 1 to 1.5 mm. wide; disk reddish brown and blood red, flat to lightly convex, the proper margin concolorous: epithecium subcontinuous, red-brown to orange, this colored layer is from 50μ to 52μ high; thecium yellowish, 100μ to 112μ high (including the colored epithecium); paraphyses strict, slender, some are clavate above and faint orange; asci clavate, the membrane thin, extending up into the epithecium; spores in 8s; acicular-fusiform, 36μ to 56μ long, 3.5μ to 4μ thick, straight or slightly curved, 5 locular, arranged longitudinally parallel in the ascus, about the upper half of the spore, containing the septa, is of the given thickness, the rest is acicular attenuated; hypothecium about 100μ high, yellow, of darker hue than the epithecium; the white, thin thalline margin contains a few gonidia; asci clavate, reaching the epithecium, thin walled; iodine stains the hym. gel. deep indigo blue, KHO gives a handsome purple violet stain. Spermagones not seen.

On back of *Pseudosuga macrocarpa* Mayr. Santa Cruz mountains (A. C. Herre), and on the same substrata in the San Gabriel mountains, Los Angeles County, at from 800 to 1500 m. alt. This lichen has been called "off hand" by me (a reprehensible proceeding) *Lecanora elatina* Ach., and distributed erroneously as such. It differs from the eastern *L. elatina* in its finer granular thallus, darker blood-red disk, the spores and the marked reaction.

BLASTENIA FERRUGINEA (Huds.) Arn. var. FRAUDENS Th. Fr., Lich. Sand. 1871, p. 184.

Thallus white, thin, effuse or absent, KHO+ gradually crimson, staining slower than the disk; apothecia sessile, crowded, small, 0.25 to 1 25 mm. wide; disk pale orange and yellowish orange, flat to convex, the proper margin paler, thin, entire and finally obsolete; disk and margins with KHO+crimson; epithecium granulose, pale yellow: thecium colorless, 56μ to 60μ high, blue with iodine, epithecium also; paraphyses loose, straight and comparatively stout, some with globular, pale yellow heads, others are barely thickened at the colorless tips; hypothecium colorless; asci clavate; spores in 8s, oblong ellipsoid, 11μ to 15μ long, 3μ to 5μ thick; bilocular and polari-bilocular, the loculi approximate, isthmus faint or doubtful; thecium and epithecium with KHO+crimson.

On bleached whalebones, San Clemente Island (Bl. Trask), also on arinaceious shale at White Point near San Pedro.

Sawtelle, California.